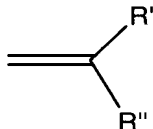


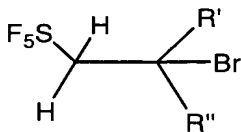
CLAIMS

1. A process for adding an SF₅ group to a terminal alkene of the formula:



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to produce a compound represented by the structure:



- wherein R' and R'' are separately H, C₁₋₂₀, alkyl or substituted alkyl, aryl or alkyl substituted aryl, C₁₋₁₀ alkoxy, C₁₋₁₀ alkyl ether, alkenyl, alkyl halogen, alkyl thionyl and alkyl amino, which comprises:

- condensing SF₅Br in said terminal alkene and, then,
effecting reacting of said terminal alkene with SF₅Br under liquid phase conditions.

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2. The process of Claim 1 wherein the terminal olefin is selected from the group consisting of propylene, isobutylene, pentene, hexene, heptene, octene, decene, dodecene, 4-vinyl-1-cyclohexene, styrene, divinyl benzene and dienes selected from the group consisting of 1,4-pentadiene, 1,4-hexadiene, 1,5-hexadiene and 1,4-heptadiene, 1,5-heptadiene, and 1,6-heptadiene.

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3. The process of Claim 2 wherein the reaction is carried out at a temperature of from -90 to +50 °C.

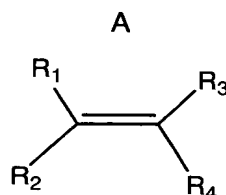
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4. The process of Claim 3 wherein a free radical initiator is added in an amount of from 1- 25 mole % and the free radical initiator is a trialkyl borane.

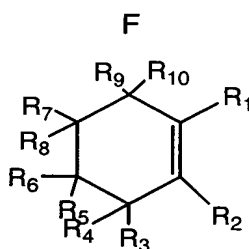
5. The process of Claim 4 wherein the free radical initiator is a triethyl borane and the reaction is carried out at a temperature of from -90 to 0 °C.

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6. A process for adding an SF₅ group to an alkene having an internal olefinic bond selected from aliphatic and cycloaliphatic olefins represented by the formulas:

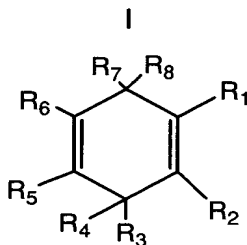


5 wherein R₁, R₂, R₃, R₄ = C₁₋₁₂ alkyl or substituted alkyl, aryl or substituted aryl, alkoxy, alkyl ether, alkyl ester and nitrile, with R₂ and R₄ additionally being = H or halogen atoms;



10 wherein R₁- R₁₀= H, halogen atoms, C₁₋₂₀, alkyl or substituted alkyl, aryl or alkyl substituted aryl, C₁₋₁₀ alkoxy, C₁₋₁₀ alkyl ether, alkenyl, alkyl halogen, alkyl thionyl, alkyl amino, and wherein R₉, R₁₀ or R₃, R₄ also represent a carbonyl group; R₉ or R₁₀ and R₄ or R₃ also represent a bridged bicyclic compound; and wherein R₇ or R₈ and R₅ or R₆ may
15 also represent a fused ring bicyclic or tricyclic cycloaliphatic or aromatic compound;

or



20 wherein R₁- R₈ = H, halogen atoms, alkyl or substituted alkyl, aryl or substituted aryl or R₇ or R₈ and R₄ or R₃ may be bridged bicyclic compounds, R₇ or R₈ and R₅ or R₆ may be fused to form bicyclic or tricyclic cycloaliphatic rings:

which comprises condensing SF₅Br in said alkene and effecting the reaction of said alkene with SF₅Br under liquid phase conditions in the presence of a free radical initiator.

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7. The process of Claim 6 wherein said free radical initiator is selected from the group consisting of trialkyl borane, organic peroxide, organic azo, and ultraviolet light.

5 8. The process of Claim 7 wherein the temperature of said reacting is from -90 to +50 °C.

9. The process of Claim 8 wherein the free radical initiator is triethyl borane.

10 10. The process of Claim 9 wherein the reaction stoichiometry employs a slight excess of SF₅Br reactant, e.g., from 1.05 to 1.2 moles per mole of olefin bond.

11. The process of Claim 10 wherein triethyl borane is employed in an amount from 1-25 mol% based upon the moles of the olefin to be treated.

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12. The process of Claim 11 wherein triethyl borane is employed in an amount from 5-10 mol %, based upon the moles of the olefin to be treated.

13. The process of Claim 9 wherein the alkene is represented by formula A and said alkenes is selected from the group consisting of pentene, hexene, heptene, octene, decene, and dodecene.

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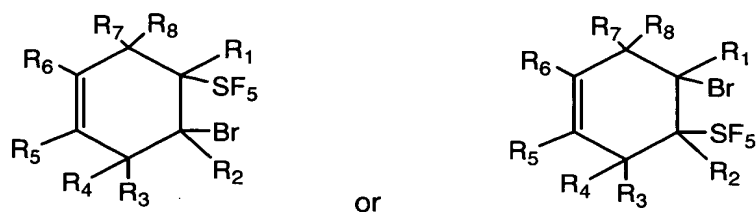
14. The process of Claim 9 wherein the alkene is represented by structure F and said cyclic olefin is selected from the group consisting of: cyclohexene, cyclooctene, norbornene, dihydronaphthalene, dihydroanthracene, dihydrophenanthrene, octahydronaphthalene, dodecahydroanthracene, dodecahydrophenanthrene.

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15. The process of Claim 9 wherein the alkene is represented by structure I and said cyclic olefin is selected from the group consisting of 1,4-cyclohexadiene, 1,6-hexahydronaphthalene, 9,13-tetrahydroanthracene.

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16. A composition represented by the structures:

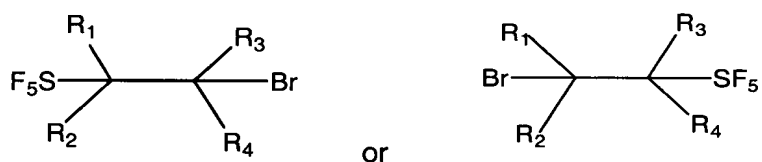


wherein R_1 - R_8 = H, halogen atoms, alkyl or substituted alkyl, aryl or substituted aryl or R_7 or R_8 and R_4 or R_3 may be bridged bicyclic compounds, R_7 or R_8 and R_5 or R_6 may be fused to form bicyclic or tricyclic cycloaliphatic rings:

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17. The composition of Claim 16 wherein R_1 - R_8 are H.

18. A composition represented by the structures:

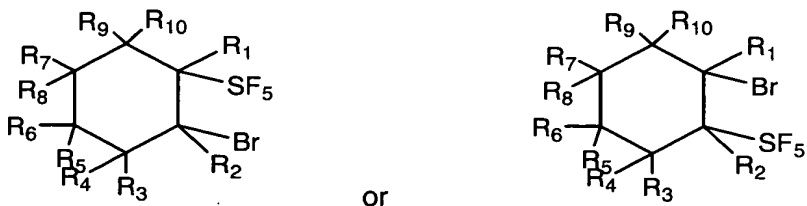


10 wherein R_1 , R_2 , R_3 , R_4 = C_{1-12} alkyl or substituted alkyl, aryl or substituted aryl, alkoxy, alkyl ether, alkyl ester and nitrile, with R_2 and R_4 additionally being = H or halogen atoms.

19. The composition of Claim 18 wherein R_2 and R_4 are C_{3-8} alkyl.

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20. A composition represented by the structure:



wherein R_1 - R_{10} = H, halogen atoms, C_{1-20} , alkyl or substituted alkyl, aryl or alkyl substituted aryl, C_{1-10} alkoxy, C_{1-10} alkyl ether, alkenyl, alkyl halogen, alkyl thionyl, alkyl amino, and wherein R_9 , R_{10} or R_3 , R_4 also represent a carbonyl group; R_9 or R_{10} and R_4 or

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R₃ also represent a bridged bicyclic compound; and wherein R₇ or R₈ and R₅ or R₆ may also represent a fused ring bicyclic or tricyclic cycloaliphatic or aromatic compound.

21. The composition of Claim 20 wherein R₁-R₁₀ are H.

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